Michigan Department of Community Health
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LabLink

Laboratory Information from the Michigan Department of Community Health - Bureau of Laboratories

Vol. 4 No. 1 July 1998

Position Statement on Rapid HIV Testing

Michigan Department of Community Health

David R. Johnson, MD, MPH, Chief Medical Executive and Deputy Director for Community Public Health
Robert Martin, DrPH, Laboratory Director

Considering the recent publication of the Centers for Disease Control and Prevention (CDC) recommendations in the Morbidity and Mortality Weekly Report (Vol. 47, no.11, March 27, 1998) regarding the use of rapid HIV tests, the Michigan Department of Community Health is taking the following position:

In areas of high seroprevalence, rapid HIV testing may be beneficial. Very few counseling and testing sites in Michigan would be in that category. Only one rapid test is currently licensed by the Food and Drug Administration (FDA). The rapid HIV test that is currently FDA approved is a moderately complex test. Most sites do not have the infrastructure required by federal regulations governing laboratory testing. Confirmatory testing is still required for positive rapid tests.

Therefore, we believe it is premature to endorse or support the routine use of rapid tests. We recommend that rapid testing not be implemented in Michigan for the following reasons in addition to those cited above: 1) because the prevalence of HIV infection in Michigan is very low (0.1%); 2) because of increased costs associated with multiple follow-up tests (repeat and confirmatory) that would be required; 3) because of difficulty in providing counseling on the basis of such results, and; 4) because of the inconvenience of drawing a second specimen for confirmation.

We recommend that rapid HIV testing be exclusively used in populations of high HIV seroprevalence, in agencies possessing both the required laboratory infrastructure and HIV counselors trained specifically to interpret rapid test results and explain the need for confirmatory testing. This position is subject to change as more rapid HIV tests become available.

DCH-0096

HCV TESTING EXPANDED

Patty Clark, M.P.H.,
Viral Serology/Viral Isolation Unit

Hepatitis C virus testing was initiated at the MDCH laboratory on August 1, 1997 as a response to the U.S. Public Health Service Blood Advisory Committee's recommendation that individuals who received a blood transfusion prior to 1992 be tested for Hepatitis C virus. For a nominal fee we are now expanding the availability of testing to include health care facilities who wish to access HCV testing for employees as a part of a bloodborne pathogens control program.

Anti-HCV screening will be provided for a fee of $30. To access this service, phone Dee Blank in Accounting at (517) 335-8453 to arrange for the purchase of form FB202. Submit 1ml of serum in a plastic vial along with a completed FB202. Be certain that the identifier on the vial **exactly** matches the identifier on the requisition form. To receive plastic vials and shipping materials phone (517) 335-9867 and request MDCH Unit #8. Unit #8 is available free of charge. The test requisition form included in Unit #8 **cannot** be used for this fee for service testing.

There is no antibody test offered to confirm HCV infection. However, the PCR method offered at MDCH can be used to test a separate EDTA plasma specimen to detect HCV RNA. The serum specimen used to detect antibodies **cannot** be used in the PCR confirmatory assay. To access this service, phone Ms. Blank at (517) 335-8453 to arrange for the purchase of form FB203. The fee for the confirmation assay is $60. Instructions for collection and shipment of the plasma specimen, suitable vial, and shipping materials are included in Unit #9. Unit #9 is also available free of charge by phoning (517) 335-9867.

Questions concerning specimen submission or testing can be directed to Patty Clark at (517) 335-8102.

GLYCOPEPTIDE RESISTANT *STAPHYLOCOCCUS* SPECIES

Barbara Robinson-Dunn, Ph.D.
Microbiology Section Director

In July 1997, the Michigan Department of Community Health and the Centers for Disease Control and Prevention reported the first United States isolate of *Staphylococcus aureus* with reduced susceptibility to vancomycin. Shortly thereafter, a second isolate was reported from a patient in New Jersey. Both isolates were from patients who received long-term intermittent therapy with vancomycin for methicillin (oxacillin) resistant *St. aureus.* Since these bacteria are also resistant to teicoplanin, a glycopeptide, they have become known as Glycopeptide Intermediate *Staphylococcus aureus* or GISA.

The following guidelines have been developed to aid laboratories in determining which *St. aureus* isolates should be submitted to MDCH for further testing.

1. Biochemically confirmed *Staphylococcus aureus* isolates with an MIC to vancomycin of 4 ug/ml or greater determined by a 24-hour microdilution or gradient diffusion method.

2. *Staphylococcus* species, coagulase negative: the isolate must be confirmed as not being *St. hemolyticus* and must have an MIC to vancomycin of 8 ug/ml or greater. Laboratories without the capability to identify coagulase-negative *Staphylococcus spp.* can submit isolates to MDCH for complete speciation.

If the suspect GISA isolate is confirmed to be intermediately or fully resistant to vancomycin at MDCH, the submitting laboratory and CDC will be immediately contacted. The Microbiology Section will consider unusual isolates individually. For consultation, please contact Dr. Robinson-Dunn at (517) 335-9641.

(The Microbiology Section would like to recognize the laboratories of Wm. Beaumont Hospital, Royal Oak and Oakwood Hospital, Dearborn for their outstanding work on the original GISA isolate submitted to MDCH. Ed.)

REPORTING OF EEE & other VIRAL ENCEPHALIDITIES
MICHIGAN DEPARTMENT OF COMMUNITY HEALTH

Mary Grace Stobierski, D.V.M., M.P.H. and Frances Pouch Downes, Dr.P.H.

Arboviral encephalidities are acute viral central nervous infections transmitted to humans by certain mosquito species that have significant public health implications. Serious human illness, including fatalities, caused by California, St. Louis and Eastern Equine Encephalitis (EEE), have been documented in Michigan. The potential for transmission varies from year to year, and depends on the interaction of numerous environmental and biological factors. There was a fatal case of EEE in Michigan in 1997. The patient was a resident of Saginaw County, but the likely county of exposure could not be determined. Both initial and confirmatory testing was performed at out-of-state laboratories; state & local health authorities did not learn of this case until six (6) months after the onset date and subsequent patient death.

This year's surveillance for arboviral infections in Michigan will include the follow-up of suspect cases in people. Active surveillance for infection in horses will be conducted from June through September. Additional surveillance will be conducted by testing mosquitoes and certain wild bird species for evidence of EEE and SLE virus. The Michigan Department of Community Health again this year needs the help of Michigan's infection control practitioners, physicians and laboratory workers. Through October 15 we request that the Communicable Epidemiology Division be contacted by phone at 517/335-8165, when a case of mosquito-borne viral encephalitis is SUSPECTED. We will then work with the health care provider to attain epidemiologic information and laboratory specimens for diagnostic testing.

The MDCH Laboratory services include IgM capture EIA to detect arboviral antibodies and viral isolation for suspect enteroviral illness. As a reminder, these tests are performed at no charge as a service to Michigan residents. Serology tests are performed at least weekly during the testing season. We encourage physicians and laboratories to utilize these testing services rather than sending them to an out-of-state laboratory. Specific questions about laboratory services and specimen handling can be directed to the laboratory at 517/335-8102.

Per the Michigan communicable disease rules, cases of viral encephalitis and aseptic meningitis are required to be reported to the appropriate local health department, typically where the patient resides. Laboratory directors, or their designees, are required to report laboratory evidence of unusual infections.

Editorial Note: The delayed reporting of this fatal case emphasizes the critical role laboratories in Michigan play in public health responses to serious infectious diseases. Prompt reporting of this case would have helped in ascertaining the source of infection, as well as in targeting additional disease surveillance activities and mosquito control efforts. Thank you for your continued cooperation in reporting.

Regionalization of Foodborne Illness Testing

Frances Pouch Downes, Dr. P.H.
Director, Division of Infectious Diseases

According to a report released by the U. S. Department of Agriculture in May 1998, at least 13 million cases of foodborne disease occur annually in the U.S.

The Michigan Department of Community Health Bureau of Laboratories received competitive funding from the Centers for Diseases Control and Prevention to respond to statewide needs to develop basic foodborne illness diagnostic capacities in the regional public health laboratories. By making testing services available locally, easier specimen submission and rapid reporting should better meet the needs of public health workers investigating outbreaks of disease. The decentralized testing service was built upon the pre-existing Regional Laboratory System. Public health laboratories located in Kent, Kalamazoo and Saginaw counties, along with the City of Detroit and the MDCH laboratories in Houghton and Lansing offer testing to agencies in surrounding public health jurisdictions.

Regional laboratories will test suspect food and stools from patients linked to a foodborne outbreak for four of the most common causes of foodborne bacterial illness: *Salmonella spp., Shigella spp., Campylobacter jejuni,* and *Escherichia coli* O157:H7. In addition to being less technically demanding to isolate, these organisms in foods could identify a widely distributed food product contaminated prior to or during distribution, rather than strictly a local mishandling of a food by a preparer. To ensure consistent quality assurance throughout the state, all regional laboratories will employ the same procedures, media, reagents and equipment. Representatives from each laboratory attended a training session at the Lansing laboratory in April. MDCH staff provides competency evaluations and will develop food specimens for an internal proficiency program.

Each regional laboratory hosted a training session for potential submitters: public health department sanitarians, epidemiologists, nurses and administrators. A specimen collection and shipment kit, redesigned for foodborne outbreak investigation, was distributed at the meeting. The regional labs have been set up to accept specimens since early June.

Another objective of the CDC grant is to expand the foodborne disease diagnostic reference testing services available at MDCH Lansing. Ongoing projects include development of hepatitis A genotyping, electron microspcopy for direct visualization of viral agents in food and stools, screening for *Salmonella* serotype Typhimurium DT104 and enhanced methods for detection of *Shigella spp.* and *Campylobacter jejuni.*

New Section Directors

The Bureau of Laboratories would like to announce the addition of two new section directors to the laboratory staff.

The Division of Infectious Diseases would like to welcome back Dr. Jeffrey Massey. Dr. Massey is joining the laboratory as the section director of Molecular Biology. Dr. Massey performed research in the molecular laboratory while obtaining his Dr. P.H. from the University of Michigan. In 1995, Dr. Massey accepted a position as the director of the Laboratory Improvement Section now in the Department of Consumer and Industry Services. In that position, he was responsible for the Health Care Financing Administration (HCFA) laboratory inspection program, commonly known as CLIA.

The Division of Chemistry and Toxicology would like to welcome Dr. John Riebow. Dr. Riebow is joining the laboratory as the section director of Health Risk Assessment. Dr. Riebow received his Ph.D. in Pharmacology and Nutrition from the University of Southern California. He did a postdoctoral fellowship in Pharmacology and Clinical Biochemistry at the Mayo Clinic and Foundation in Rochester Minnesota. He is board certified in Clinical Chemistry by the American Board for Clinical Chemistry. His professional career includes industrial, academic and clinical experiences.

Please join us in welcoming both Dr. Massey and Dr. Riebow.

Missing Specimen Data

William Schneider Enterics/STD/Chromatography Unit

Occasionally specimen requisitions are incomplete when received at the Michigan Department of Community Health Laboratories. Laboratory personnel are required to collect the missing information before testing can be initiated. This may delay testing while the submitter is contacted for further information.

According to Subpart J of the Clinical Laboratory Improvement Amendments of 1988 (CLIA '88), each specimen submitted to a clinical laboratory for testing must be accompanied by a written or electronic request. This request, from an authorized person, must include the following information (CLIA Ref. 493.1105):

1. Patient's name or other identifier
2. Identification of the authorized submitter
3. Name of the test to be performed
4. Date the specimen was collected
5. Additional information relevant and necessary for a specific test.

The reasoning for the first three requirements is obvious. The laboratory must be able to connect the request form, specimen and test report by a specific identifier. The test request form and the specimen must be labeled with the same patient name/identifier. Approximately 500 specimens are handled each day by our Data and Special Handling Unit. Consistent labeling makes it possible to match samples and test request forms when they arrive in the laboratory. Since the need for this information is critical, these three fields must be complete on test requisitions submitted to MDCH Laboratories for testing.

The need for the latter two fields is less obvious, so they are less likely to be completed. The specimen collection date is necessary for the following reasons:

1. To correctly interpret the test results, this information is often necessary.
2. It is essential to determine whether the time interval between collection and testing is within limits set to ensure that the specimen has not been compromised by delayed transport to the laboratory. Some specimens lose viability or intensity in a short time. Thus, if the acceptable transport time is exceeded, the specimen may be rejected.
3. Some laboratory tests must be initiated within a defined time limit after specimen collection. For example the HIV Direct Detection by PCR procedure requires that specimens be processed within 24 hours of collection.

The importance of additional information and its relevance for a specific test is often not understood. The source of a clinical specimen is required because some tests are only approved for specific specimen types. For example, sexually transmitted diseases caused by *Neisseria gonorrhoeae* and *Chlamydia trachamatis* can be rapidly diagnosed in the laboratory with the use of a DNA probe (GenProbe Pace 2). This test is only approved for urethral, cervical and conjunctival specimens. Also, this test is not to be used on specimens from any individual under the age of 12. Therefore, the patient age is critical when assessing specimens submitted for this test.

We strive to make our test request form relevant for your and our needs. We regularly review these forms and try to simplify them while continuing to collect both the information required for laboratory testing and the epidemiological required by the department. Please fill out the test request form completely. It will improve turn around time as testing will not be delayed while essential information is collected, thus improving laboratory service to you and your clients.

Your contribution to the LabLink is encouraged!! If your laboratory has a question that you would like answered or a concern that you would like addressed, please contact us. We will put it in print so that other labs can benefit from your suggestions, questions and concerns. Call (517) 335-9763, or write Susan Shiflett at MDCH Micro/LabLink, P.O. Box 30035, Lansing, Michigan, 48909. You can also send e-mail to shifletts@state.mi.us.

QUIRKY BUGS...

Robert Jacobson, BS, MT(ASCP)
Reference Bacteriology Unit

The Reference Bacteriology Unit at MDCH receives an assortment of peculiar bacteria on a regular basis. These bacteria include unusual Gram positive and negative rods and cocci that are not frequently seen in the clinical microbiology setting. However, sometimes very common isolates are submitted that have unusual characteristics. The traits which are usually relied upon for identification of these isolates may be lacking or delayed in their expression. Alternately, some features may be expressed that are normally absent.

There may be a variety of reasons for the atypical reactions. These include (but are not limited to) such events as mutation, inability to express an enzyme that is present or acquisition of new genetic material. The following are a few examples of unusual characteristics we have documented in some common isolates.

***Bacillus cereus,* penicillin susceptible**. Occasionally an isolate of *B. cereus* is submitted because it is susceptible to penicillin. The literature states that most isolates of *B. cereus* are resistant to penicillin. Additional tests such as production of lecithinase, fermentation of salicin and demonstration of motility can distinguish isolates of penicillin susceptible *B. cereus* from *B. anthracis*.

Beta hemolytic *Streptococcus agalactiae* (group B *Streptococcus*) is identified classically with the use of the CAMP test. Rarely, an isolate is received which has a negative CAMP reaction. Both latex agglutination and hippurate hydrolysis can be used to identify these isolates.

***Staphylococcus aureus,* catalase negative**. Catalase negative isolates of *St. aureus* are quite unusual. If all other phenotypic characteristics are typical, the porphyrin test can be performed to detect the cytochromes.

***Streptococcus pneumoniae,* optochin negative.** Optochin intermediate isolates of *Str. pneumoniae* (with zones of inhibition less than 14mm) can be troublesome to confirm. Mundy, et. al. (Am. J. Clin. Pathol. 1998; 109:55-61) tested isolates for optochin susceptibility, bile solubility (tube and plate method), Quelling reaction and with a DNA probe (Accuprobe; Genprobe, San Diego,CA). Various combinations of results were obtained. None of the optochin resistant isolates were DNA probe positive.

***Vibrio parahaemolyticus,* urea positive**. Urea positive isolates of *Vibrio parahaemolyticus* are being seen more frequently. The literature states that 15% of isolates can hydrolyze urea.

***Enterococcus* species, catalase positive.** Some species of *Enterococcus* may produce a weak "pseudo-catalase" type reaction when subjected to hydrogen peroxide. When performing this test, it is necessary to remember to take the isolate from a non-blood containing medium. Isolates of *Enterococcus* species are negative with the porphyrin test.

***Campylobacter jejuni,* resistant to nalidixic acid.** Some variability is observed in the susceptibility of *Campylobacter sp.* to nalidixic acid and cephalothin. Isolates with the capability of hydrolyzing hippurate should be reported as *C. jejuni*. Isolates of *C. jejuni* which are resistant to nalidixic acid may also be resistant to the flouroquinolones. If this occurs, further susceptibility testing may be warranted if antimicrobial therapy with this class of drugs is required.

***Haemophilus influenzae,* non-dextrose fermenting.** We recently observed an isolate of *Haemophilus influenzae* that did not ferment dextrose. Although this test is not routinely performed in many clinical labs, it is used at MDCH to determine biotype. All other phenotypic characteristics of this isolate were typical.

We see more of these types of isolates at MDCH because of our role as a reference laboratory. However, all microbiologists should be aware that these atypical strains occur. Confirmation of these isolates can be done at MDCH if your laboratory does not have the resources for specialized testing.

NOW HOW DO I HANDLE THIS?????

It is late Friday afternoon. All of your colleagues in the Microbiology laboratory have gone home. You have stayed to finalize a few reports. The telephone rings and you answer it. The clerk from the ER is on the line and tells you that they are admitting a patient with possible botulism and need to have specimens tested STAT. You get this sinking feeling that once again you are not going to be able to pick your children up on time. What will you do?

The answer to this is quite easy and should get you out in plenty of time. Monday through Friday, 8:00 A.M. through 5:00 P.M. call MDCH, either the Bureau of Laboratories (517 335-8063), the Division of Infectious Diseases (517 335-8067), the Microbiology Section (517 335-9641) or Communicable Disease Epidemiology (517 335-8165). Outside those hours, the on-call scientist can be reached at (517) 335-9030. You will be asked the patient's name, age, sex, home address, any known food history and the doctor's name and number. The laboratory director or epidemiologist will then contact the patient's physician to discuss the history and physical findings. Because it is necessary to test for botulinum toxin in mice, inappropriate requests for testing will not be approved.

From this point, one of several things may happen. If the patient is an infant and infant botulism is suspected, the request for testing will be approved. If the patient is an older child or adult and has objective neurologic findings which could be compatible with botulism, testing will most likely be approved. If the symptomatology is shaky and there is a questionable food history, you will be requested to send specimens to MDCH. These specimens will be held for 2-4 weeks. During that time, if the disease begins to look more like botulism, a telephone call is all that will be necessary to initiate testing.

Once testing has been approved, you will be contacted to arrange for specimen transport. MDCH will arrange for microbiologists to extract the specimens and inoculate mice over the weekend, f necessary,but it is the responsibility of the diagnostic microbiology laboratory to get the specimens to MDCH in as rapid a manner as possible. Specimens must be kept cool but not frozen during transport.

Only a fecal specimen (25 grams) is required for suspected cases of infant botulism. The specimens recommended for non-infant botulism are a fecal specimen (25 grams) and 3-4 ml of serum. The negative screening test requires four (4) days. If any mice die during that time, a neutralization assay with specific antisera will be performed. The patient's physician will be notified of changes in the status of the mice during this time.

If you have any questions about testing for botulism, contact Dr. Robinson-Dunn at (517) 335-9641.

READER SUBMISSION —

Hepatitis A and Frozen Sliced Strawberries An Outbreak Averted in Genesee County, Michigan, But a Public Policy Pandora's Box Is Unveiled

Hepatitis A continues to cause sporadic cases, epidemics and occasional deaths in the United States. The onset is usually abrupt with fever, malaise, anorexia, nausea and abdominal discomfort followed in a few days by jaundice. The disease varies in clinical severity from mild illness lasting 1 to 2 weeks to a severely disabling disease that can last several months.

The effects and costs of an increasingly global economy can now be felt in local communities. In early 1997, Hepatitis A-contaminated frozen sliced strawberries were shipped to a distributor in Kalamazoo, Michigan from a processing plant in southern California. From there, the berries were shipped to school districts, retail and wholesale food purveyors and processors.

Because of potential exposure to the suspected lots of strawberries, nearly 900 people in Genesee County received immune globulin. Epidemiological containment cost the county $44,000. No confirmed case was linked to this exposure in Genesee County. As an outbreak was averted, questions of public policy emerged. Who will pay for testing procedures? What about the uninsured and under-insured patients?

The experience in Genesee County has demonstrated the need for local health departments to act as the first line of defense and as an information response center. It also highlights the need for a strong local, public health system across the country, a heightened awareness of an increasingly complex food industry and a close working relationship between local providers of health care and the community.

Any questions regarding this study, or to obtain a complete copy, please contact:

Dr. Charles A. Oke
Genesee County Health Department
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630 South Saginaw Street
Flint, Michigan 48502
(810) 768-7970

Antimicrobial Resistance Trends, Regions One (Reg 1, Detroit Area) and Two to Twelve (Reg 2 - 12, Outstate Michigan) Penicillin Resistant Study-site[1] Isolates of *Streptococcus pneumoniae* and Vancomycin Resistant Sterile-site[2] Isolates of *Enterococcus spp.* Michigan Sentinel Hospital Laboratory Survey, Third Quarter, 1995 through Fourth Quarter, 1997

Percent Resistant[3]

		1995 Quarters Mean[4]		1996 Quarters Mean[4]		1997 Quarters							
	Resistance	Third & Fourth		First to Fourth		First		Second		Third		Fourth	
Microorganism	Classification[3]	Rg 1	Rg 2-12	Rg 1	Rg 2-12	Rg 1	Rg 2-12	Rg 1	Rg 2-12	Rg 1	Rg 2-12	Rg 1	Rg 2-1
Str. pneumoniae	Moderate or High	20	14	25	18	28	16	26	19	25	31	16	20
Str. pneumoniae	High Level only	5	4	7	3	10	5	17	6	9	6	8	4
E. faecalis	Resistant	1	0	2	1	3	1	2	0	2	2	2	1
E. faecium	Resistant	34	7	41	9	42	6	59	12	45	3	51	15
Enterococcus spp.	Resistant	8	1	10	2	15	2	15	4	10	7	13	2

[1] Study sites = blood, CSF, deep surgical wound, pleural fluid(fl.), peritoneal fl., respiratory specimens or synovial fl.
[2] Sterile sites = blood, CSF, deep surgical wound, pleural fluid(fl.), peritoneal fl., or synovial fl.
[3] NCCLS, Performance Standards for Antimicrobial Susceptibility Testing, M100 - S7.
[4] Weighted quarterly mean was calculated for years 1995 and 96.

LabLink is published quarterly by the Michigan Department of Community Health, Bureau of Laboratories, to provide laboratory information to Michigan Health professionals and the public health community.

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